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ABSTRACT

The invention relates to laser technology and fiber optics, and particularly to a dispersion element based on a planar photonic crystal structure formed in a layer of a high index material is disclosed. In the embodiments of the invention the length of the dispersion element is defined so that to provide maximum compression of a phase-modulated pulse. In one embodiment the dispersion element is based on a planar photonic crystal structure in the form of a one-dimensional (1D) periodic structure formed in a layer of a high index material of a predetermined thickness. the periodic structure comprising a plurality of equally spaced parallel grooves of a predetermined width and depth made in the high index layer. In another embodiment the dispersion element is based on a two-dimensional periodic structure as illustrated in Fig.8 in which the size of the first holes are different from that of the second holes, the sizes of the first and second holes and refractive indexes of the high index material and the substrate are defined so that to provide guided propagation of the phase-modulated pulse in one-mode operation along the columns of the second holes.